Utah Federal and State Land Managers

Discussion points on reducing the Clearing Index

- Currently national and regional emphasis is on treating fuels adjacent to communities at risk.
- Within the next five years the Dixie NF. anticipates having approximately 5,000 acres of piles to burn, with an annual target of approximately 500 acres.
- All Federal and State Land Managers will greatly be increasing the number of acres treated adjacent to these communities at risk

Examples of Defensible Fire Suppression Zones directly adjacent to Communities at Risk

Mammoth Creek subdivision Defensible Fire Zone

New Harmony Defensible Fire Suppression Zone

- Many of the Communities at Risk are primary summer residences, with very few year round residences.

- The combustion process of pile burning vs. under burning is more efficient

Comparison – smoldering/creeping

Comparison – Flaming Stage

Time Line Sequence

Escalante Ranger District, DIF 143
South Creek Piles

General location prior to ignition, 1-15-2003, Clearing Index 550, time 1030 am

Ignition starts at approximately 1100 using drip torch.

Pile in early to mid flaming phase, approximately 25 minutes after ignition.

Pile in late flaming phase, approximately 50 minutes after ignition.

Looking north into small drainage where approximately 9 piles were ignited.

1500 hours, looking into drainage where 75-80 piles have been ignited. Piles are now in smoldering phase,

1630 hours, leaving site no smoke visible

1-16-2003, 0830 hours, Clearing Index Air shed #13 predicted @ 57'/ Air Quality Basin # 3 predicted @ 120'

Piles pushed together (chunked) and re-ignited, 0915 hours

Emissions emitted from ignited pile approximately 20 minutes after pile was ignited.

Emissions emitted from ignited piles approximately 10 to 50 minutes after piles were ignited.

1-16-2003, 1500 hours leaving area. No noticeable smoke, visibility excellent, predicted Clearing Index in Air Quality Basin # 3 120’

Once piles are in the flaming stage little smoke and emissions is evident.

BLM Salt Lake Field Office

- Emission reduction techniques used in burning of piled juniper slash

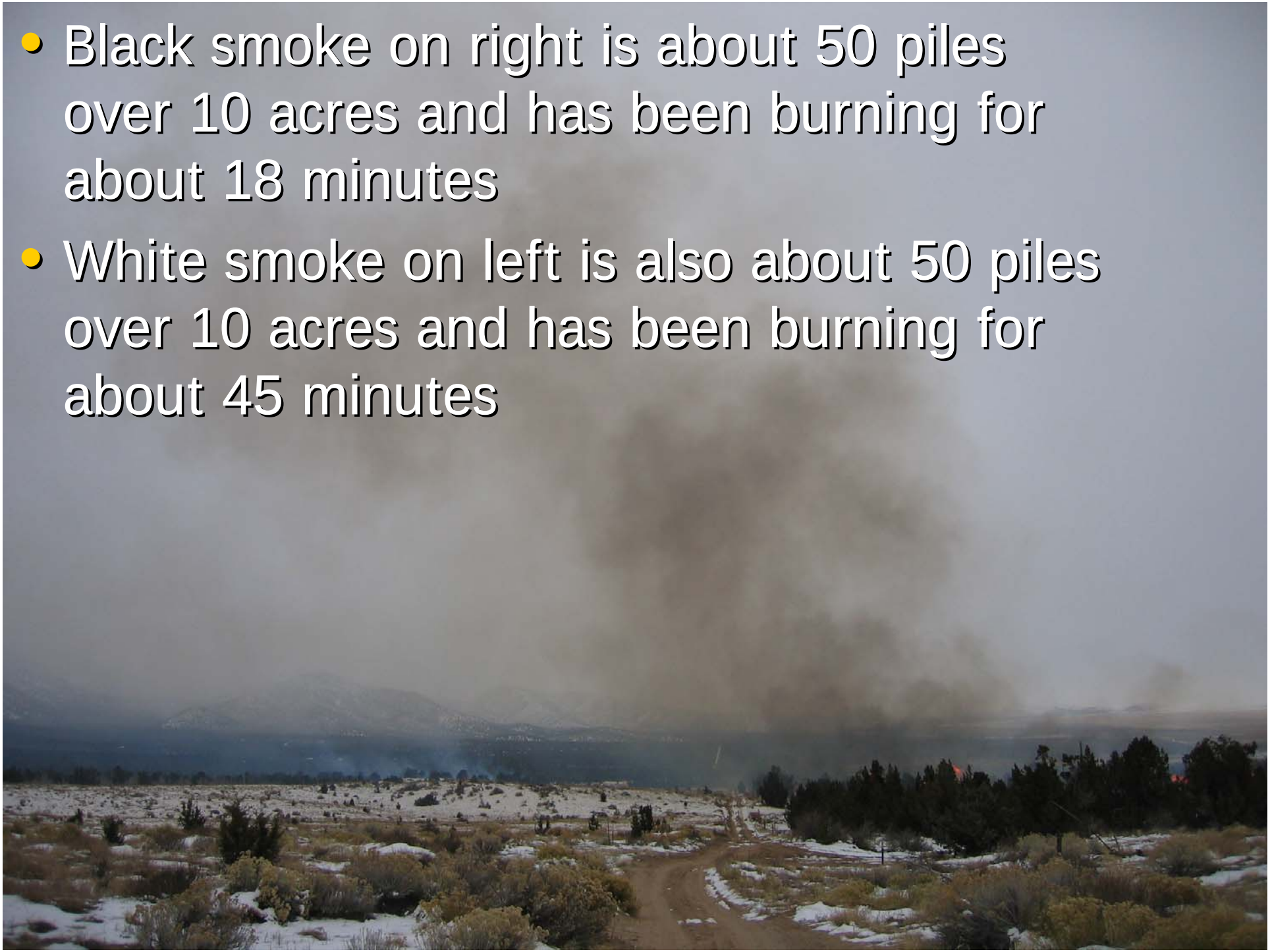
Terra pile burn

- About 50% of juniper trees were hand thinned on 26 acres in May 2004
- Large diameter slash was left scattered on site for firewood collection by Terra residents
- About 1.88 tons/acre of small diameter juniper slash was hand piled in conical shape for an average size of 6’x6’x6’ and 279 ft^3 of volume

Pile ignited 2 minutes prior to photo, piles fully engulfed, with little smoke being emitted

About 12 piles over 2 acres burning
About 3-5 minutes into burning
Smoke disperses within 500’ of unit

1/8 mile north of 50 piles over 10 acres
Piles have been burning for about 30 minutes
Mostly smoldering combustion now and majority of consumption is completed



- Black smoke on right is about 50 piles over 10 acres and has been burning for about 18 minutes
- White smoke on left is also about 50 piles over 10 acres and has been burning for about 45 minutes

Terra Pre-burn and Post-burn Photos – Consumption Monitoring Piles

Pile #4		

Terra Pre-burn and Post-burn Photos – Consumption Monitoring Piles

Pile #5		

Terra Piles % Consumption

Pile	Pre-Burn Volume	Post-Burn Volume	Percent Consumption
#1	206 ft²	1 ft²	99.96%
#2	410 ft²	3 ft²	99.99%
#3	127 ft²	3/4ft²	99.99%
#4	382 ft²	3 ft²	99.99%
#5	294 ft²	1 ft²	99.97%
#6	255 ft²	1/2 ft²	100%
Averages:	**279 ft²**	**1.5 ft²**	**99.98%**

Pile burning -Lessons Learned

- Smoke production is decreased and consumption is increased due to:
  1. Nature of material in the pile (small diameter, clean, cured material)
  2. Arrangement of material in pile (stack in tight, conical shape)
  3. Chunking of smoldering material to increase efficiency and reduce smoldering

Only during the ignition phase is most smoke predominant

Properly constructed piles burn cleanly, thus reducing smoldering


29 4:15PM

Entire hillside has been ignited, note smoke is limited as house is viewed in foreground.

Piles quickly enter the flaming stage of combustion where burning is most efficient.

Hand Pile construction

Grass RX burns

- Piles are generally constructed in a specified manner (twice as tall as they are wide) this improves the combustion process and reduces smoldering.

- Pile burning produces less emissions and visual smoke as compared to under burning as the flaming process is generally more efficient and smoldering is reduced.

- Directly adjacent to Communities At Risk reducing fuels loads initially is best accomplished by piling.

- Emissions from piles burning is generally complete within 1 day from ignition as compared to broadcast burning which may smolder for a week.

- As land managers we need to maintain credibility with the public by reducing visual impacts this includes both smoke and excess fuels. As either would negatively impact to our local programs.

- In southern Utah the public in general never notices, or is absent from public lands when pile burning occurs.

- Reducing the Clearing Index to 400 would be advantageous to our program and the publics perception as fuels loading on public lands would be reduced.

- Currently during the fall and winter months we are only able to burn 4-8 days per month with the current clearing index requirement. This is only 20-40% of the days that we must have employees funded. This is not very cost effective.

- In addition the majority of our workforce can be classified as seasonal employees. These employees are limited to the number of days they can work (1,039 hours/130 days).

- We either need to find employees that will work part-time which is impossible, hire individuals specifically during the peak pile burning periods, which most find undesirable, or have other fuels related projects for them to work on, but in general our country is not accessible due to snow.

- Reducing the Clearing Index to 400 may give us an additional 1-2 days of burning per month, which would improve costs and allow to accomplish more.

- Utah Federal Land Managers strongly support reducing the Clearing Index .
- We invite the board to any ongoing projects – fire or mechanical in the Southern Utah Area